Amendments to the Specification

Please amend the specification as follows:

[0005] The reliability of a digital communication channel is commonly expressed in term of Bit Error Rate (referred to herein as "BER"). A digital communication system is typically designed to provide a reliability level better than some worst-case reference level, further referred to as BER_{req}, dependant on the type of service provided above this communication channel.

[0007] The noise present in a communication system can be classified according to its source. For example, the noise can theoretically be distinguished as:

- The external noise (N_e) defined as the noise already present on the signal at the input of the receiver.
- The internal noise (N_i) defined as the equivalent noise increase introduced by the non-ideal behavior of the receiver. This typically includes the receiver input noise, analog to digital converter noise and non-linear behavior, residual echo noise in duplex systems, residual inter-symbol interference, etc...

[0038] The method and system described herein proposes an easy way to cope with the requirement that a different noise margin should be taken on the internal and on the external noise sources. Even if the internal noise is assumed to be constant, it may be necessary to take some margin against this nose as well, such as to insure a nominal operation at a BER level lower than BER_{req} or/and to insure that small variation on the internal noise do not cause the noise in the system to exceed BER_{req}.

[0048] This system ~~as~~has an equilibrium point if a<>0 for

$$m_{db} = \frac{m_{i,dB}^{real} - b}{a}$$

[0060] FIG. 1 shows a block diagram of one embodiment of an apparatus 100 for optimizing a communication system 102 for receiving and processing an input communication signal. The apparatus 100 includes a parameter monitoring component 104 that monitors the system parameters associated with the communication system 102. The apparatus 100 further includes a noise monitoring component 106 that receives input from the system 102 and the parameter monitoring component 104 and ~~distinguish~~distinguishes and ~~determine~~determines the contributions of the external noise and the internal noise to the overall noise. A virtual noise processor 108 receives the external and internal noise values from the noise monitoring component 106, and calculates a virtual noise value from the noise components, along with separate external and internal noise margins, as disclosed herein. A system parameter processor 110 receives the virtual noise value from the virtual noise processor 108 and adjusts one or more system parameters so as to maintain the virtual noise to signal ratio at a predetermined margin above the require noise to signal ratio (i.e., to maintain the desired noise margin).